20CS6033 AI – I

Fall 2021

Instructor: Anca Ralescu

**Homework Assignment #1**

**Assigned on August 24, 2021**

**Due on sept 2, 2021**

**11:59PM on Canvas**

**50 points**

This assignment is a kind of warm-up exercise. It can be programmed in python or Matlab. In either case, students must implement all the algorithms, that is they are not allowed to use any code lifted from online or from some library.

At the top of your program make sure to include in a comment section, the names of ALL students in your group.

In this assignment you are asked to implement a hybrid sort algorithm which is a hybrid of a *recursive algorithm* such as **mergeSort** or **quickSort** and a sequential algorithm such a **bubbleSort**. Let us call **hybridSort** the predicate for this new algorithm.

The **hybridSort** takes the following arguments:

1. L: the list to be sorted
2. BIG: the name of a sort algorithm to be used for large lists (e.g., **mergeSort**, or quicksort)
3. SMALL: the name of a sort algorithm for small lists (e.g., **bubbleSort**)
4. T: a threshold on the number of elements in the list
5. SORTED: the sorted version of the list L.

What you need to turn in a well-documented program file in which you have defined.

1. **Bubblesort**
2. **quickSort**
3. **hybridSort**
4. **several runs for lists different lengths**
5. **At the end of the program file insert in a comment section the examples of queries that you ran, and the results obtained.**

**Note:** It is very important is to notice that for large lists **hybridSort** behaves like **mergeSort** or **quicksort** but DOES NOT CALL/INVOKE these.